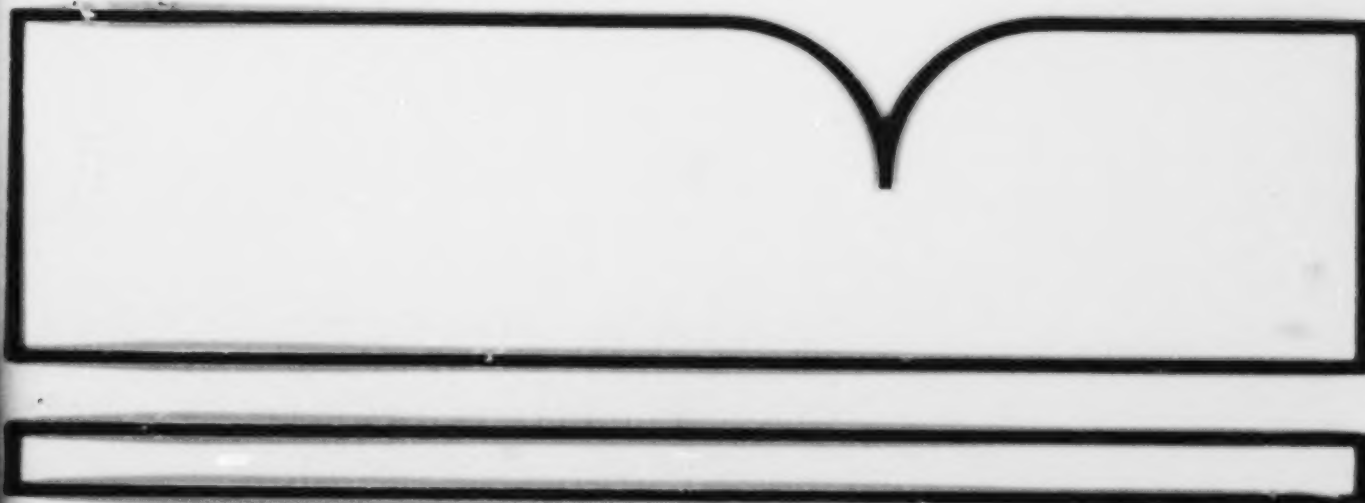


PB89-193965

Registration Standard for Pesticide Products
Containing Monuron as the Active Ingredient

(U.S.) Environmental Protection Agency, Washington, DC

Jul 83



U.S. Department of Commerce
National Technical Information Service

NTIS

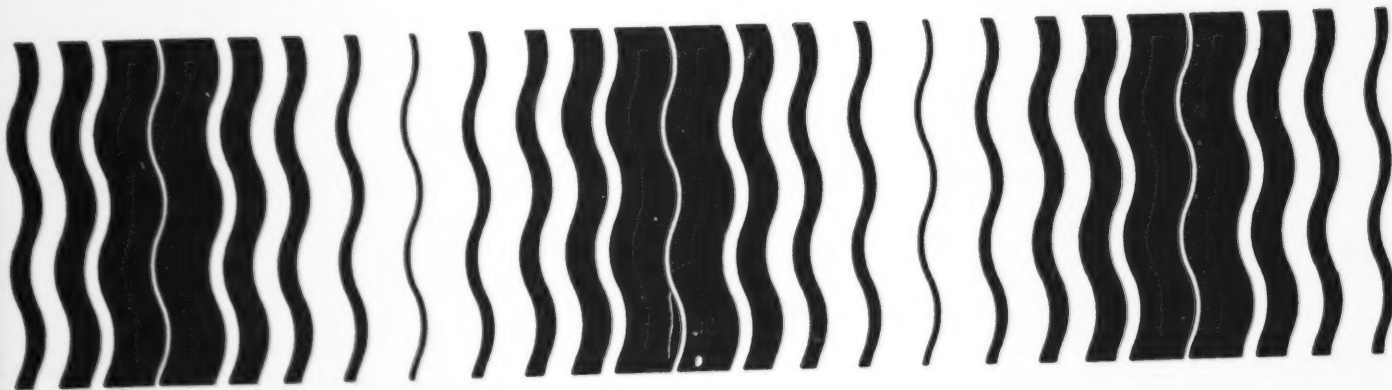
United States
Environmental Protection
Agency

Pesticides and
Toxic Substances
(H-7501C)

540/RS-83-013



Registration Standard For Pesticide Products Containing MONURON As The Active Ingredient



REPRODUCED BY
U.S. DEPARTMENT OF COMMERCE
NATIONAL TECHNICAL INFORMATION SERVICE
SPRINGFIELD, VA. 22161

59272-101

REPORT DOCUMENTATION PAGE	1. REPORT NO.	2.	3. Recipient's Accession No. P089 193965/AS
4. Title and Subtitle Registration Standard for Monuron		5. Report Date July 1983	
7. Author(s) EPA, Office of Pesticide Programs Registration Div.		8. Performing Organization Rept. No. 540/RS-83-013	
9. Performing Organization Name and Address U.S. Environmental Protection Agency Office of Pesticide Programs Registration Division TS-767C 401 M Street, S.W. Washington, D.C. 20460		10. Project/Task/Work Unit No. 11. Contract(C) or Grant(G) No. (C) (G)	
12. Sponsoring Organization Name and Address Same as #9		13. Type of Report & Period Covered 14.	
15. Supplementary Notes			
16. Abstract (Limit: 200 words) This document contains information regarding the registration of pesticide products containing the subject active ingredient. The document includes how to register under a registration standard, regulatory position and rationale, and summaries of date requirements and data gaps. Also included is a bibliography containing citations of all studies reviewed by EPA in arriving at the positions and conclusions contained in the standard.			
17. Document Analysis a. Descriptors Pesticides, standards, regulations, manufacturing, chemistry, toxicology, residues, ecology, path of pollutants. b. Identifiers/Open-Ended Terms c. COSATI Field/Group			
18. Availability Statement: Publicly Available		19. Security Class (This Report) Unclassified 20. Security Class (This Page) Unclassified 21. No. of Pages 62 22. Price \$15.95 MF \$6.25	

(See ANSI-Z39.18)

See Instructions on Reverse

OPTIONAL FORM 272 (4-77)
(Formerly NTIS-35)

GUIDANCE FOR THE REREGISTRATION OF
MANUFACTURING-USE AND CERTAIN END-USE
PRODUCTS CONTAINING
MONURON
AS THE ACTIVE INGREDIENT

ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF PESTICIDE PROGRAMS
Washington, DC 20460

July 1983

EPA-540/RS-83-013

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INTRODUCTION

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Section 3(g), as amended in 1978, directs the Environmental Protection Agency (EPA) to reregister all currently registered products as expeditiously as possible. Each registrant of a currently registered product who wishes to continue to sell or distribute that product in commerce must apply for reregistration.

This guidance document sets forth certain of the requirements for registration and reregistration of all manufacturing-use products (MPs) containing the subject chemical as the sole active ingredient. These requirements include: that certain scientific data be submitted and that certain standards of toxicity, composition, labeling, and packaging be met. Registrants of MPs are referred to all Sections and Tables for specific information regarding their responsibilities under this guidance document.

This guidance document also sets forth the data requirements for those end-use products which contain the subject active ingredient and for which the source of that active ingredient is (1) not registered with EPA or (2) produced by the registrant's firm, or a firm which has ownership in common with the registrant's firm, or (3) both (1) and (2). Registrants of such end-use products can exempt themselves from these requirements if they change their source of supply to a registered source, provided the source (i.e., registered active ingredient product) is obtained from a firm that does not share ownership in common with the registrant's firm. (If the end-use product registrant decides to switch sources, a new confidential statement of formula, EPA Form 8570-4, must be submitted to the appropriate Product Manager within 90 days of receipt of this guidance document.) Registrants of affected end-use products are referred to only Sections II, III, and VI and Table A for specific information regarding their responsibilities under this guidance document.

It should be noted that end-use products containing the subject active ingredient will not be reregistered at this time. Any necessary labeling changes will be implemented under the Agency's Label Improvement Program at a future time.

EPA will issue a notice of intent to cancel or suspend the registration of any currently registered product if the registrant fails to comply with the requirements set forth in this guidance document and with the requirements contained in subsequent information from EPA about compliance with certain data support requirements.

This guidance document has been prepared to provide registrants with specific information on how they may reregister their manufacturing-use products or maintain their end-use products' registration. (Refer to the cover letter's attachment for a listing of your affected products.) If for any reason you decide to request that the Agency discontinue the registration of any of your products subject to the registration requirements in this document, please notify the Product Manager named in the cover letter, within 90 days from the receipt of this document, that you wish to voluntarily cancel the registration(s). If you decide to maintain your product registration(s), you must provide the information described in the following pages within the timeframes outlined.

Registrants are reminded that Section 6(a)(2) of FIFRA requires you at any time to submit factual information raising concerns of possible unreasonable adverse effects of a pesticide. You should notify the Agency of interim results of studies in progress if those results show possible adverse effects.

This guidance document will be supplemented by EPA with additional information about compliance with data support requirements. In Monsanto v. Administrator, EPA was recently enjoined by the District Court for the Eastern District of Missouri from implementing in any way the "mandatory data licensing" aspects of §3(c)(1)(D) of FIFRA. EPA is assessing the implications of the injunction for the reregistration process. Because this situation is currently unresolved, EPA has decided to proceed with the requirements in this guidance package which do not relate to the "data licensing" issue and to supplement the package with additional guidance when circumstances permit.

II. REGULATORY POSITION AND RATIONALE

A. INTRODUCTION

This chapter describes the regulatory position of the Environmental Protection Agency ("the Agency") on monuron based on an evaluation of all registered manufacturing-use products (MUP's) containing monuron as the sole active ingredient. Future requests for registrations of substantially similar products will be covered by this standard. Dissimilar products will require amendments to the standard. This document provides the rationale for the Agency's position and the criteria for registration. It also discusses labeling requirements and tolerances.

"Monuron" is the accepted common name for the compound, 3-(p-chlorophenyl)-1,1-dimethylurea recognized by the American National Standards Institute. Trade and other names used for monuron include: Monurex®, Telvar®, and Chlorfenidim. The Chemical Abstracts Service (CAS) Registry number is 150-68-5. The Office of Pesticides Program's Internal Control Number (EPA Shaughnessy number) is 035501.

B. USE PROFILE

Monuron is a substituted urea herbicide for control of certain woody plants, annual and perennial weeds, and aquatic weeds, to be used on agricultural premises (around buildings, fencerows, farm roads, etc.), rights-of-way (highway, railroad, and utility rights-of-way), commercial and industrial premises (tank farms, lumber yards, storage areas, plant sites, parking lots, fencerows), domestic dwellings (dichondra lawns), schools (fencerows, parking lots, playgrounds, etc.), on ditchbanks, in irrigation and drainage ditches, along lake shorelines, in ornamental ponds and aquaria.

It was patented by E. I. duPont de Nemours and Company in 1951, (US Patent No. 2,655,444-7) and was first registered for use in 1955. Technical monuron is now being produced abroad and the current importer is Hopkins Agricultural Chemical Company.

Monuron is available as a technical material, at 97% active ingredient and as a manufacturing use product containing 22% monuron for formulation of granular monuron end-use formulations or as 80% manufacturing-use products. As a sole active ingredient, monuron is available in granular, wettable powder, dust, pelleted/tableted, and emulsifiable concentrate formulations.

C. REGULATORY POSITION

Based on a review and evaluation of all available data and other relevant information on monuron, the Agency has made the following determinations:

1. Manufacturing-use pesticide products containing monuron as a sole active ingredient may be registered for sale, distribution, formulation and use in the United States, subject to the terms and

conditions specified in this standard. Applicants having products not conforming to this standard must apply to amend the document so those products containing monuron may be registered and reregistered under this standard. Mixtures and end-use products containing monuron are not covered under this standard.

2. Available data do not show that any of the risk criteria listed in Section 162.11(a) of Title 40 of the U.S. Code of Federal Regulations have been met or exceeded for the uses of monuron specified in this standard.
3. All of the toxicity data cited as supporting data for the registration of monuron are considered to be supplementary or invalid excepting one mutagenicity study: Simmons, 1977.
4. The available monuron environmental fate data are insufficient to fully assess the chemical at this time. When additional environmental fate data are submitted, a complete environmental exposure assessment can be made.
5. There are insufficient data to characterize the toxic effects of monuron on aquatic organisms, fish and wildlife. When additional ecological effects data are submitted, a complete hazard assessment can be made.
6. The available monuron product chemistry data are insufficient to fully assess the chemical at this time. The data gaps outlined in the product chemistry data tables are tests needed to adequately support the registration of a monuron product.
7. The Agency now considers the use of monuron on drainage ditches in Florida citrus groves as a food use. Residue data to support this use are not available. Monuron residue data and/or other data demonstrating that such use will or will not result in residues in water or in crops receiving irrigation water will be required. If residues occur in crops, tolerances will be required.
8. Registrants must provide or agree to develop additional data, as specified in the tables attached to this standard, in order to maintain existing registrations or to permit new monuron registrations.
9. Because there are no established tolerances for monuron, residues in food or feed will not be permitted from uses approved in any registration under this standard.

D. REGULATORY RATIONALE

The Agency has determined the following:

1. As stated above, all of the toxicology data are considered invalid or supplementary and therefore, do not permit conclusions as to the

safety of monuron. However, the available supplementary data indicate that monuron has a low order of toxicity (TOX CAT III) by the oral and dermal routes of exposure, but high acute oral doses have produced symptoms of anemia, methemoglobinemia and pathological changes in the spleen, bone marrow, liver and kidneys of test animals. The available supplementary longer term studies further demonstrated a similar potential for affecting these organs, as well as lung and testes, at high dietary levels.

The potential oncogenic hazard has been evaluated independently by the International Agency Research on Carcinogenesis (IARC), Carcinogen Assessment Group (CAG), EPA, and the Hazard Evaluation Division, Office of Pesticide Programs, all of which have identified and confirmed the need for further oncogenicity testing of monuron.

Further testing has recently been completed by the National Toxicology Program (NTP), Public Health Service (PHS) which included its evaluation in both rats and mice. These reports are now under peer review within NTP/PHS and were not available in time to be considered in this review.

2. The Agency believes that the use of monuron on drainage ditches in Florida citrus groves is a food use because of the potential for residues to be found in the crop. If this use is to be approved, monuron residue data and/or other data demonstrating that such use will or will not result in residues in water or in crops receiving irrigation water will be required. If residues occur in crops, tolerances will be required.
3. It is not the Agency's policy to cancel or to withhold registration merely because data are missing or inadequate (See Sections 3(c)(2) (B) and 3(C)(7) of the FIFRA). Rather, publication of this standard provides a mechanism for identifying data needs and registration under the standard and allows for the upgrading of labels during the period in which the required data are being developed. These data will be reviewed and evaluated when they are received and the Agency will determine at that time whether they will affect the registration(s) of monuron.

E. CRITERIA FOR REGISTRATION UNDER THIS STANDARD

To be subject to this standard, products must meet the following conditions:

1. Contain monuron as the sole active ingredient and,
2. Conform to the acute toxicity limits, product composition, and use pattern requirements listed in Section F of this document. The applicant for registration or reregistration of products subject to this standard must comply with all terms and conditions described in it, including committing to fill data gaps on a schedule agreed to by both this Agency and the applicant, and when applicable,

offering to pay compensation for data to the extent required by Section 3(c)(1)(D) of the FIFRA. Applicants for registration under this standard must follow the instructions contained in this standard and complete and submit the appropriate forms within the time specified.

F. ACCEPTABLE RANGES AND LIMITS

1. Product Composition Standard

Technical grade products must contain at least 97 percent monuron as the sole active ingredient. Each manufacturing-use product formulation proposed for registration must be fully described with an appropriate certification of limits. In addition, the active ingredient found in the manufacturing-use monuron products must be substantially similar to that in currently registered technical products. Any manufacturing-use product not meeting these requirements will be considered a new product and will not be registerable under this standard.

2. Acute Toxicity Limits

The Agency will consider registration of technical grade and manufacturing-use products containing monuron within acute toxicity III or IV provided that the labeling of those products bears appropriate precautionary statements.

3. Use Patterns

To be registered under this standard, manufacturing-use products containing Monuron may be labeled for formulation only into end-use products for use as herbicides to control certain woody plants, certain annual and perennial weeds, and algae, to be used on agricultural premises (around buildings, fencerows, farm roads, etc.), rights-of-way (highway, railroad, and utility rights-of-way), commercial and industrial premises (tank farms, lumber yards, storage areas, plant sites, parking lots, fencerows, etc.), domestic dwellings (dichondra lawns), schools, (fencerows, parking lots, playgrounds, etc.), on ditchbanks, in irrigation and drainage ditches, along lake shorelines, in ornamental ponds, and aquaria.

G. REQUIRED LABELING

All technical grade, manufacturing-use, and end-use products containing monuron must bear appropriate labeling as specified in 40 CFR 162.10. Other portions of the guidance package contain specific information regarding label requirements.

H. TOLERANCE REASSESSMENT

There are no established tolerances for monuron in the United States and no pending registrations or requests for establishment of tolerances or exemptions from requirements of a tolerance for monuron.

III. REQUIREMENT FOR SUBMISSION OF GENERIC DATA

- A. This portion of the guidance document is a Notice issued under the authority of FIFRA Section 3(c)(2)(B) and describes, in table format, the data required for maintaining the registrability of each product. Additionally, a bibliography (Appendix III-1) is included that identifies that data considered as part of the data base supporting this standard. EPA has determined that additional generic data described in this Notice must be submitted to EPA for evaluation in order to maintain in effect the registration(s) of your product(s) identified as an attachment to the cover letter accompanying this guidance document. As required by FIFRA Section 3(c)(2)(B), you are required to take appropriate steps to comply with this Notice.

EPA may suspend the registration of each of those products unless, within the specified time, you have informed EPA how you will satisfy the requirements of this Notice. Any such suspension will remain in effect until you have complied with the terms of this Notice.

- B. What Generic Data ^{1/}Must Be Submitted. You may ascertain which generic data you must submit by consulting Table A at the end of this section. That table shows all the generic data needed to evaluate the continued registrability of all products, and the dates by which the data must be submitted. The required data must be submitted and any necessary studies must be conducted in accordance with EPA-approved protocols, the Pesticide Registration Guidelines ^{2/}, or data collected under the approved protocols of the Organization for Economic Cooperation and Development (OECD). If you wish not to develop data which are necessary to support the registration or reregistration of certain uses appearing in your labeling, you may delete those uses at the time you submit your revised labeling.

Also for certain kinds of testing (generally ecological effects), EPA requires the test substance to be a "typical formulation," and in those cases EPA needs data of that

^{1/} Generic data pertain to the properties or effects of a particular ingredient, and thus are relevant to an evaluation of the risks of all products containing that ingredient (or all such products having a certain use pattern), regardless of any such product's unique composition or use. Product-specific data relate only to the properties or effects of a product with a particular composition (or a group of products with closely similar composition).

^{2/} The Pesticide Registration Guidelines were repropoed on November 24, 1982 in 47 Federal Register 53192.

type for each major formulation category (e.g., emulsifiable concentrates, wettable powders, granulars, etc.) These are classified as generic data and when needed are specified in Table A. EPA may possess data on certain "typical formulations" but not others. Note: The "typical formulation" data should not be confused with product-specific data (Table B) which are required on each formulation. Product-specific data are further explained in Section IV of this document.

C. Options Available for Complying With Requirements to Submit Data

Within 90 days of your receipt of this Notice you must submit to EPA a completed copy of the form entitled "FIFRA Section 3(c)(2)(B) Summary Sheet" [EPA Form 8580-1, Appendix III-2] for each of your products. On that form you must state which of the following methods you will use to comply with the requirements of this Notice:

1. (a) Notify EPA that you will submit the data, and
(b) either submit the existing data you believe will satisfy the requirement, or state that you will generate the data by conducting testing. If the test procedures you will use deviate from (or are not specified in) the Registration Guidelines or protocols contained in the Reports of Expert Groups to the Chemicals Group, Organization for Economic Cooperation and Development (OECD) Chemicals Testing Programme, you must enclose the protocols you will use.
2. Notify EPA that you have entered into an agreement with one or more other registrants to jointly develop (or share in the cost of developing) the data. If you elect this option, you must notify EPA which registrant(s) are parties to the agreement.
3. File with EPA a completed "Certification of Attempt to Enter Into an Agreement With Other Registrants for Development of Data" (EPA Form 8580-6, Appendix III-3)*/
4. Request that EPA amend your registration by deleting the uses for which the data are needed. (This option is not available to applicants for new products.)

*/ FIFRA Section 3(c)(2)(B) authorizes joint development of data by two or more registrants, and provides a mechanism by which parties can obtain an arbitrator's decision if they agree to jointly develop data but fail to agree on all the terms of the agreement. The statute does not compel any registrant to agree to develop data jointly.

(Footnote continued at bottom of next page)

5. Request voluntary cancellation of the registration(s) of your products for which the data are needed. (This option is not available to applicants for new products.)
- D. Procedures for Requesting Changes in Testing Methodology and Extensions of Time

EPA recognizes that you may disagree with our conclusions regarding the appropriate ways to develop the required data or how quickly the data must be submitted. If the test procedures you plan to use deviate from (or are not specified in) the registration guidelines or protocols contained in the reports of the Expert Groups to the Chemical Groups, Organization for Economic Cooperation and Development (OECD) Chemicals Testing Programme, you must submit the protocol for Agency review prior to the initiation of the test.

If you think that you will need more time to generate the required data than is allowed by EPA's schedule, you may submit a request for an extension of time. The extension request must be submitted in writing to the Product Manager. The extension request should state the reasons why you conclude that an extension is appropriate. While EPA considers your request, you must strive to meet the deadline for submitting the required data.

(Footnote continued from previous page)

In EPA's opinion, joint data development by all registrants who are subject to the requirements to submit a pertinent item of data or a cost-sharing agreement among all such registrants is clearly in the public interest. Duplication of testing could increase costs, tie up testing facilities, and subject an unnecessarily large number of animals to testing.

As noted earlier, EPA has discretion not to suspend the registration of a product when a registrant fails to submit data required under FIFRA Section 3(c)(2)(B). EPA has concluded that it is appropriate to exercise its discretion not to suspend in ways which will discourage duplicative testing. Accordingly, if (1) a registrant has informed us of his intent to develop and submit data required by this Notice; and (2) a second registrant informs EPA that it has made a bona fide offer to the first registrant to share in the expenses of the testing [on terms to be agreed upon or determined by arbitration under FIFRA, Section 3(c)(2)(B)(iii)]; and (3) the first registrant has declined to agree to enter into a cost-sharing agreement, EPA will not suspend the second firm's registration. While the first firm is not required to agree to jointly develop data, EPA is not required to force the second firm to engage in economically inefficient duplicative testing in order to maintain its registration.

TABLE A
GENERIC DATA REQUIREMENTS FOR MONURON

Data Requirement	1/ Composition	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)? ^{2/}
<u>§158.120 Product Chemistry</u>				
<u>Product Identity:</u>				
61-1 - Identity of Ingredients	TGAI	No	-	Yes ^{3/}
61-2 - Statement of Composition	TGAI	No	-	Yes ^{3/}
61-3 - Discussion of Formation of Ingredients	TGAI	No	-	Yes ^{3/}
<u>Analysis and Certification of Product Ingredients</u>				
62-1 - Preliminary Analysis	TGAI	No	-	Yes ^{3/}
62-2 - Certification of Limits	TGAI	No	-	Yes ^{3/}
62-3 - Analytical Methods for Enforcement of Limits	TGAI	No	-	Yes ^{3/}
<u>Physical and Chemical Characteristics</u>				
63-2 - Color	TGAI	No	-	Yes ^{4/}
63-3 - Physical State	TGAI	Partial	005021075	Yes ^{4/}
63-4 - Odor	TGAI	No	-	Yes ^{4/}
63-5 - Melting Point	TGAI	No	-	Yes ^{4/}
63-6 - Boiling Point	TGAI	N/A ^{5/}	-	Yes ^{4/}
63-7 - Density, Bulk Density, or Specific Gravity	TGAI	No	-	Yes ^{4/}

TABLE A
GENERIC DATA REQUIREMENTS FOR MONURON

GENERIC DATA REQUIREMENTS FOR					Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?2/
Data Requirement	1/ Composition	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation		
<u>§ 158.120 Product Chemistry</u> (continued)					
63-8 - Solubility	TGAI OR PAI	Partial	005021082		Yes4/
63-9 - Vapor Pressure	TGAI OR PAI	No	-		Yes4/
63-10 - Dissociation constant	TGAI OR PAI	No	-		Yes4/
63-11 - Octanol/water parti- tion coefficient	PAI	Partial	005018258		Yes4/
63-12 - pH	TGAI	No	-		Yes4/
63-13 - Stability	TGAI	No	-		Yes4/
<u>Other Requirements:</u>					
64-1 - Submittal of samples	Choice	N/A5/			

TABLE A
GENERIC DATA REQUIREMENTS FOR MONURON

§ 158.120 Product Chemistry
(continued)

- 1/ Composition: TGAI = Technical grade of the active ingredient; PAI = Pure active ingredient.
- 2/ Data must be submitted no later than six months from the issue date of the guidance package.
- 3/ Certain of the required data are available to the Agency in previously submitted Confidential Statements of Formula. The Agency, however, has noted that in most cases these data are both incomplete or are in need of updating. The Agency, therefore, will require the submission of data for each technical compound undergoing registration or reregistration.
- 4/ Elements of the indicated data have been located by the Agency within standard references. The Agency cannot, however, apply this information to currently produced technical products due to possible variations in synthesis processes. The indicated physical chemical properties data will, therefore, be required for each technical product undergoing registration or reregistration.
- 5/ N/A: Not applicable = Data requirement is not necessary for purposes of this standard.

TABLE A
GENERIC DATA REQUIREMENTS FOR MONURON

Data Requirement	1/ Composition	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?2/
<u>§158.125 Residue Chemistry</u>				
171-4 - Nature of Residue (Metabolism)	[Reserved] 3/			
- Plants				
- Livestock				
171-4 - Residue Analytical Method	[Reserved] 3/			
- Plant residues				
- Animal residues				
171-4 - Storage Stability Data	[Reserved] 3/			
171-4 - Magnitude of the Residue- Residue Studies for Each Food Use	[Reserved] 3/			
- Crop Group #1 - (Name)				
o Crop 1 (Name)				
-- Crop field trials				
-- Processed Food/Feed				
o Crop 2, etc.				
-- Crop field trials				
-- Processed Food/Feed				

TABLE A
GENERIC DATA REQUIREMENTS FOR MONURON

Data Requirement	1/ Composition	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?2/
§158.125 Residue Chemistry (continued)				
- Crop Group 2, etc.				
-- Potable Water				
171-4 - Magnitude of the Residue- Residue Studies for Each Food Use	[Reserved]3/			
-- Fish				
-- Irrigated Crops				
-- Field trials				
-- Processed Food/Feed				
-- Food Handling				
-- Meat/milk/poultry/eggs				

TABLE A
GENERIC DATA REQUIREMENTS FOR MONURON

§158.125 Residue Chemistry
(continued)

- 1/ Composition: TGA1 = Technical grade of the active ingredient; PAIRA = Pure active ingredient, radiolabelled; TEP = Typical end-use product.
- 2/ Data must be submitted no later than forty-eight months from the issue date of the guidance package.
- 3/ The Agency is reserving all residue chemistry requirements until such time as those data necessary for an evaluation of monuron's toxicology have been received and evaluated. Although the Agency does not have adequate data characterizing monuron's potential chronic effects, there are indications within the available literature that monuron may pose some level of oncogenic risk. Should those data requested elsewhere within this standard indicate that monuron does present an oncogenic or other significant risk, the Agency will make a determination as to whether or not petitions for tolerance will be necessary for the use in drainage ditches in Florida citrus groves.

TABLE A
GENERIC DATA REQUIREMENTS FOR MONURON

Data Requirement	1/ Composition	Use 2/ Pattern	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?3/
<u>§158.130 Environmental Fate</u>					
<u>DEGRADATION STUDIES-LAB:</u>					
161-1 - Hydrolysis	TGAI or PAIRA	A, B, C	No	-	Yes
<u>Photodegradation</u>					
161-2 - In Water	TGAI or PAIRA	A, B,	No	-	Yes
161-3 - On Soil	TGAI or PAIRA	A	N/A ^{5/}	-	
161-4 - In Air	TGAI or PAIRA	A, C	N/A	-	
<u>METABOLISM STUDIES-LAB:</u>					
162-1 - Aerobic Soil	TGAI or PAIRA	A, C	No	-	Yes
162-2 - Anaerobic Soil	TGAI or PAIRA	A, C	N/A	-	
162-3 - Anaerobic Aquatic	TGAI or PAIRA	B	No	-	Yes
162-4 - Aerobic Aquatic	TGAI or PAIRA	B	No	-	Yes
<u>MOBILITY STUDIES:</u>					
163-1 - Leaching and Adsorption/Desorption	TGAI or PAIRA	A	Partial	000001450 000044017	Yes ^{4/}
163-2 - Volatility (Lab)	TEP	A, C	N/A		
163-3 - Volatility (Field)	TEP	A, C	N/A		

TABLE A
GENERIC DATA REQUIREMENTS FOR MONURON

Data Requirement	Composition	1/ Use 2/ Pattern	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)? ^{3/}
<u>§ 158.130 Environmental Fate</u> (continued)					
<u>DISSIPATION STUDIES-FIELD:</u>					
164-1 - Soil	TEP	A,C	No	-	Yes
164-2 - Aquatic (Sediment)	TEP	B	No	-	Yes
164-3 - Forstry	TEP	A	N/A ^{5/}		
164-4 - Combination and Tank Mixes			N/A		
164-5 - Soil, Long-term	TEP	A,C	N/A	-	Yes
<u>ACCUMULATION STUDIES:</u>					
165-1 - Rotational Crops (Confined)	PAIRA	A	N/A		
165-2 - Rotational Crops (Field)	TEP	A	N/A		
165-3 - Irrigated Crops	TEP	B	No	-	Yes ^{6/}
165-4 - In Fish	TGAI or PAIRA	A,B	No	-	Yes
165-5 - In Aquatic Non- Target Organisms	TEP	B	No	-	Yes

TABLE A
GENERIC DATA REQUIREMENTS FOR MONURON

§158.130 Environmental Fate
(continued)

- 1/ Composition: TGA1 = Technical grade of the active ingredient; PAIRA = Pure active ingredient, radiolabelled; TEP = Typical end-use product.
- 2/ The use patterns are coded as follows: A = Terrestrial, Non-Food; B = Aquatic, Non-Food; C = Domestic Outdoor.
- 3/ Data must be submitted no later than forty-eight months from the issue date of the guidance package.
- 4/ Data are required on the leaching of monuron aged in soil for 30 days. Batch equilibrium (adsorption/desorption) studies are needed to support B (aquatic, non-food uses) and C (domestic outdoor uses).
- 5/ N/A: Not applicable = Data requirement is not necessary for purposes of this standard.
- 6/ Data are required if water containing monuron residues is used to irrigate crops.

TABLE A
GENERIC DATA REQUIREMENTS FOR MONURON

Data Requirement	Composition	1/ Use 2/ Pattern	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)? ^{3/}
<u>§ 158.135 Toxicology</u>					
<u>ACUTE TESTING:</u>					
81-1 - Oral LD ₅₀ - Rat	TGAI	A,B,C	No	-	Yes
81-2 - Dermal LD ₅₀ - Rat	TGAI	A,B,C	No	-	Yes
81-3 - Inhalation LC ₅₀ - Rat	TGAI	A,B,C	N/A ^{6/}		
81-7 - Acute Delayed Neurotoxicity - Hen	TGAI	A,B,C	N/A		
<u>SUBCHRONIC TESTING:</u>					
82-1 - 90-Day Feeding - Rodent, Non-rodent	TGAI	C	No	-	Yes ^{4/}
82-2 - 21-Day Dermal	TGAI	A,B,C	No	-	[Reserved] ^{5/}
82-3 - 90-Day Dermal	TGAI	A,B,C	N/A		
82-4 - 90-Day Inhalation- Rat	TGAI	A,B,C	N/A		
82-5 - 90-Day Neurotoxicity- Hen/Mammal	TGAI	A,B,C	N/A		

TABLE A
GENERIC DATA REQUIREMENTS FOR MONURON

Data Requirement	Composition	1/ Use 2/ Pattern	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)		Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)? ^{3/}
			No	Yes		
<u>§158.135 Toxicology</u> (continued)						
<u>CHRONIC TESTING:</u>						
83-1 - Chronic Toxicity - 2 species: Rodent and Non-Rodent	TGAI	A, B, C	No	-	-	Yes ^{7/}
83-2 - Oncogenicity Study - 2 species: Rat and Mouse preferred	TGAI	A, B, C	No	-	-	Yes ^{8/}
83-3 - Teratogenicity - 2 species	TGAI	A, B	No	-	-	Yes
83-4 - Reproduction, 2-generation	TGAI	A, B, C	N/A ^{6/}	-	-	
<u>MUTAGENICITY TESTING:</u>						
84-2 - Gene Mutation Rodent, Non-rodent	TGAI	A, B, C	No	-	-	Yes
84-2 - Chromosomal Aberration	TGAI	A, B, C	No	-	-	Yes
84-2 - Other Genotoxic Effects	TGAI	A, B, C	Partial	005009139	-	Yes ^{9/}
<u>SPECIAL TESTING:</u>						
85-1 - General Metabolism	PAI OR PAIRA	A, B, C	No	-	-	Yes
- Sulf* and Methemoglobin	TGAI	A, B, C	No	-	-	Yes ^{10/}

TABLE A
GENERIC DATA REQUIREMENTS FOR MONURON

§158.135 Toxicology
(continued)

- 1/ Composition: PAI = Pure active ingredient; PAIRA = Pure active ingredient, radiolabelled; Choice = Choice of several test substances determined on a case-by-case basis.
- 2/ The use patterns are coded as follows: A = Terrestrial, Non-Food; C = Greenhouse, Non-Food; D = Domestic Outdoor; E = Indoor.
- 3/ Data must be submitted no later than forty-eight months from the issue date of the guidance package.
- 4/ These data will not be required should other data be submitted to the Agency which demonstrates the absence of detectable residues in crops receiving irrigation water from monuron treated ditches.
- 5/ This data requirement is reserved pending the receipt and evaluation of data relevant to monuron's dermal LD₅₀.
- 6/ N/A: Not applicable= Data requirement is not necessary for purposes of this standard.
- 7/ Studies designed to simultaneously meet the requirements of both the chronic feeding and oncogenicity studies can be conducted.
- 8/ The Agency has become aware that the National Cancer Institute is concluding an oncogenicity study utilizing monuron. Until such time that this study may be received and evaluated, however, it may not be concluded that the study will satisfy Agency requirements. Registrants are, therefore, cautioned that they may remain liable for the satisfactory fulfillment of this data requirement.
- 9/ In vivo evaluations are required for the following tests: DNA damage and repair, numerical chromosomal aberrations, mammalian cell transformation, and target organ/cell analysis.
- 10/ Data relating the levels of sulf and methemoglobin following dietary exposure are being required by the Agency for all substituted phenylurea compounds. While this testing may be combined with other required testing involving dietary exposure, dose levels must be such that a no observable effect level may be established.

TABLE A
GENERIC DATA REQUIREMENTS FOR MONURON

Data Requirement	Composition	1/ Use 2/ Pattern	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)73/
<u>§158.145 Wildlife and Aquatic Organisms</u>					
<u>AVIAN AND MAMMALIAN TESTING</u>					
71-1 - Avian Oral LD ₅₀	TGAI	A,B,C	No	-	Yes ⁵ /
71-2 - Avian Dietary LD ₅₀	TGAI	A,B,C	Partial	000028757	Yes ⁶ /
71-3 - Wild Mammal Toxicity	TGAI	A,B,C	N/A ⁴ /		
71-4 - Avian Reproduction	TGAI	A,B,C	N/A		
71-5 - Simulated and Actual Field Testing - Mammals and Birds	TEP	A,B,C	N/A		
<u>AQUATIC ORGANISM TESTING</u>					
72-1 - Freshwater Fish LC ₅₀	TGAI	A,B,C	No	-	Yes
	TEP	B	Partial	000033320	Yes ⁷ / ⁸ /
72-2 - Acute LC ₅₀ Freshwater Invertebrates	TGAI	A,B,C	No	-	Yes ⁹ /
	TEP	B	No	-	Yes ⁹ /
72-3 - Acute LC ₅₀ Estuarine and Marine Organisms	TGAI	A,B,C	No	-	Yes ¹⁰ /
	TEP	B	No	-	Yes ¹⁰ /

TABLE A
GENERIC DATA REQUIREMENTS FOR MONURON

Data Requirement	1/ Composition	Use 2/ Pattern	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)? ^{3/}
<u>§158.145 Wildlife and Aquatic Organisms</u> (continued)					
<u>AQUATIC ORGANISM TESTING</u>					
72-4 - Fish Early Life Stage and Aquatic Invertebrate Life- Cycle	TGAI	A, B, C	N/A ^{4/}		
72-5 - Fish - Life-Cycle	TGAI	A, B, C	N/A		
72-6 - Aquatic Organism Accumulation	TGAI, PAI Degradation Product	A, B, C	N/A		
72-7 - Simulated or Actual Field Testing - Aquatic Organisms	TGAI	A, B, C	N/A		
<u>§158.155 Nontarget Insect</u>					
<u>NONTARGET INSECT TESTING - POLLINATORS:</u>					
141 - 1 - Honey bee acute contact LD ₅₀	TGAI	A	Yes	000001999	No
141 - 2 - Honey bee toxicity of residues on foliage	TEP	A	N/A		

TABLE A
GENERIC DATA REQUIREMENTS FOR MONURON

Data Requirement	1/ Composition	Use 2/ Pattern	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?3/
<u>NONTARGET INSECT TESTING - POLLINATORS:</u>					
141 - 3 - Wild bees important in alfalfa pollina- tion-toxicity of residues on foliage	TEP	A	N/A		
141 - 4 - Honey bee subacute feeding study	[Reserved] 11/				
141 - 5 - Field testing for pollinators study	TEP	A	N/A		
<u>NONTARGET INSECT TESTING - AQUATIC INSECTS:</u>					
142-1 - Acute toxicity to aquatic insects	[Reserved] 12/				
142-2 - Aquatic insect life-cycle study	[Reserved] 12/				
142-2 - Simulated actual field testing for aquatic insects	[Reserved] 12/				
143-1 - NONTARGET INSECT thru 143-3 <u>TESTING - PREDATORS AND PARASITES</u>	[Reserved] 12/				

TABLE A
GENERIC DATA REQUIREMENTS FOR MONURON

§158.145 Wildlife and Aquatic Organisms
(continued)

- 1/ Composition: TGAI = Technical grade of the active ingredient; PAI = pure active ingredient; TEP = Typical end-use product.
- 2/ The use patterns are coded as follows: A = Terrestrial, Non-Crop; B = Aquatic, Non-Food; C = Domestic Outdoor.
- 3/ Data must be submitted no later than forty-eight months from the issue date of the guidance package.
- 4/ N/A: Not applicable = Data requirement is not necessary for the purposes of this standard.
- 5/ Data are required for an avian acute oral LD₅₀ for one species of upland gamebird (preferably bobwhite quail).
- 6/ Eight-day dietary toxicity studies are required on two avian species: one species of wild waterfowl (preferably the mallard) and one species of upland game bird (preferably the bobwhite or other native quail, or ring-necked pheasant). Hill, et al. (1975) (MRID 00028757) may be reconsidered by the Agency for fulfillment of this data requirement with the submission of dose related mortality data and information related to the percent active ingredient of the formulation utilized in the study.
- 7/ Walker, C. R., (1965) (MRID 5018708) may be reconsidered by the Agency for fulfillment of the data requirement for a 96-hour warmwater fish bioassay. In order for the Agency to make full use of the Walker study, satisfactory information regarding the dose related mortality and the percent active ingredient of both the technical and formulated products utilized in the study must be obtained and submitted for review. Should these data be either unavailable or unsuitable for Agency use, a 96-hour warmwater fish bioassay will remain as a data requirement. Data are required for a 96-hour coldwater fish bioassay.
- 8/ Data are required for a 96-hour coldwater fish species (rainbow trout).
- 9/ Data are required for a 48-hour freshwater invertebrates species (preferably Daphnia magna).
- 10/ Data are required for a 48-hour LC₅₀ for two species of marine invertebrates (preferably oyster larvae and shrimp).
- 11/ Reserved pending development of test methodology.
- 12/ Reserved pending decision as to whether data requirement should be established.

TABLE B
PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING MONURON

Data Requirement	Composition ^{1/}	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?2/
<u>§158.120 Product Chemistry</u>				
<u>Product Identity</u>				
61-1 - Identity of Ingredients	MP	No	-	Yes ^{3/}
61-2 - Statement of Composition	MP	No	-	Yes ^{3/}
61-3 - Discussion of Formation of Ingredients	MP	No	-	Yes ^{3/}
<u>Analysis and Certification of Product Ingredients:</u>				
62-1 - Preliminary Analysis	MP	No	-	Yes ^{3/}
62-2 - Certification of Limits	MP	No	-	Yes ^{3/}
62-3 - Analytical Methods for Enforcement of Limits	MP	No	-	Yes ^{3/}
<u>Physical and Chemical Characteristics</u>				
63-2 - Color	MP	No	-	Yes ^{4/}
63-3 - Physical State	MP	Partial	005021075	Yes ^{4/}
62-4 - Odor	MP	No	-	Yes ^{4/}
62-7 - Density, bulk density, or specific gravity	MP	No	-	Yes ^{3/}

TABLE B
PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING MONURON

Data Requirement	Composition	1/ Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)	Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?2/
<u>§158.120 Product Chemistry</u> (continued)				
63-12 - pH	MP	No	-	Yes ⁴ /
63-14 - Oxidizing or reducing action	MP	No		Yes ⁴ /
63-15 - Flammability action	MP	No		Yes ⁵ /
63-16 - Explodability	MP	No		Yes ⁴ /
63-17 - Storage Stability	MP	No		Yes ⁴ /
63-18 - Viscosity	MP	No		Yes ⁴ /
63-19 - Miscibility	MP	Yes		No
<u>Other Requirements</u>				
64-1 - Submittal of Samples	Choice			N/A ⁶ /

TABLE B
PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING MONURON

§ 158.120 Product Chemistry
(continued)

- 1/ Composition: MP = Manufacturing-use product.
- 2/ Data must be submitted no later than six-months from the issue date of the guidance package.
- 3/ Certain of the required data are available to the Agency in previously submitted Confidential Statements of Formula. The Agency, however, has noted that in most cases these data are both incomplete and are in need of updating. The Agency, therefore, will require the submission of data for each manufacturing-use product undergoing registration or reregistration.
- 4/ Elements of the indicated data have been located by the Agency within standard references. The Agency cannot, however, apply this information to currently produced manufacturing-use products due to possible variations in manufacturing processes. The indicated physical chemical properties data will, therefore, be required for each manufacturing-use product undergoing registration or reregistration.
- 5/ Flammability data required for combustible liquids only.
- 6/ N/A: Not applicable = Data requirement is not necessary for purposes of this standard.

TABLE B
PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING MONURON

Data Requirement	Composition	Does EPA Have Data To Satisfy This Requirement? (Yes, No or Partially)		Bibliographic Citation	Must Additional Data Be Submitted Under FIFRA Section 3(c)(2)(B)?2/
		No	Yes		
<u>§158.135 Toxicology</u>					
<u>ACUTE TESTING</u>					
81-1 - Oral LD ₅₀ - Rat	MP	No	Yes	-	
81-2 - Dermal LD ₅₀	MP	No	Yes	-	
81-3 - Inhalationl LC ₅₀ - Rat	MP	No	Yes	-	
81-4 - Primary Eye Irritation - Rabbit	MP	No	Yes	-	
81-5 - Primary Dermal Irritation	MP	No	Yes	-	
81-6 - Dermal Sensitization	MP	No	Yes	-	

TABLE B
PRODUCT SPECIFIC DATA REQUIREMENTS FOR MANUFACTURING-USE PRODUCTS CONTAINING MONURON

§158.135 Toxicology
(continued)

- 1/ Composition: MP = Manufacturing-use product.
- 2/ Data must be submitted no later than six-months from the issue date of the guidance package.

IV. REQUIREMENT FOR SUBMISSION OF PRODUCT-SPECIFIC DATA

Note: This section applies only to manufacturing-use products, not end-use products.

A necessary first step in determining which statements must appear on your product's label is the completion and submission to EPA of product-specific data* listed on the form entitled "Product Specific Data Report" (EPA Form 8580-4, Appendix IV-1) to fill "gaps" identified by EPA concerning your product. Under the authority of FIFRA Section 3(c)(2)(B), EPA has determined that you must submit these data to EPA in order to register or reregister your product(s). All of these data must be submitted not later than six months after you receive this guidance document.

"Product-Specific Data Requirements for Manufacturing-Use Products" appearing in Table B permit you to determine which product-specific data you must submit. This can be done by examining the entries in the column of those tables entitled "Must Data Be Submitted Under §3(c)(2)(B)."

* / Product specific data pertains to data that support the formulation which is marketed; it usually includes product chemistry data and acute toxicology data.

V. SUBMISSION OF REVISED LABELING AND PACKAGING INFORMATION

Note: This section applies only to manufacturing-use products, not end-use products.

The Agency requires applicants for registration or reregistration to ensure that each label (1) contains accurate, complete, and sufficient instructions and precautions, reflecting the results of data concerning the product and its ingredients, and (2) incorporates labeling format and terminology which are sufficiently standardized to avoid user confusion.

As part of your application, you will be required to submit draft labeling consistent with: applicable product-specific data; the precautionary statements and use directions; and the regulations concerning classification [40 CFR §162.11(c)], packaging [40 CFR §162.16], and labeling [40 CFR §162.10, Appendix V-1 and V-2], as indicated by the following paragraphs of this section of the guidance document.

You will be informed later when you must submit the revised labeling set forth in this guidance package.

A. Label Contents

40 CFR §162.10 (Appendix V-1) requires that certain specific labeling statements must appear at certain locations on the label. This is referred to as format labeling. Specific label items listed below are keyed to Tables D, E, and F (Appendix VI-2).

Item 1. **PRODUCT NAME** - The name, brand, or trademark is required to be located on the front panel, preferably centered in the upper part of the panel. The name of a product will not be accepted if it is false or misleading. See Appendix V-1. [40 CFR §162.10(b)]

Item 2. **COMPANY NAME AND ADDRESS** - The name and address of the registrant or distributor is required on the label. The name and address should preferably be located at the bottom of the front panel or at the end of the label text. See Appendix V-1. [40 CFR §162.10(c)]

Item 3. **NET CONTENTS** - A net content statement is required on all labels. The preferred location is the bottom of the front panel immediately above the company name and address, or at the end of the label text. The net contents must be stated in terms of weight, expressed as avoirdupois pounds

and ounces, and stated in terms of the largest suitable unit, i.e., "1 pound 10 ounces" rather than "26 ounces." In addition to the required units specified, net contents may be expressed in metric units. See Appendix V-1. [40 CFR §162.10(d)]

Item 4. EPA REGISTRATION NUMBER - The registration number assigned to the pesticide product must appear on the label, preceded by the phrase "EPA Registration No.," or "EPA Reg. No." The registration number must be set in type of a size and style similar to other print on that part of the label on which it appears and must run parallel to it. The registration number and the required identifying phrase must not appear in such a manner as to suggest or imply recommendation or endorsement of the product by the Agency. See Appendix V-1. [40 CFR §162.10(e)]

Item 5. EPA ESTABLISHMENT NUMBER - The EPA establishment number, preceded by the phrase "EPA Est." is the final establishment at which the product was produced, and may appear in any suitable location on the label or immediate container. It must also appear on the wrapper or outside container of the package if the EPA establishment registration number on the immediate container cannot be clearly read through such wrapper or container. See Appendix V-1. [40 CFR §162.10(f)]

Item 6. INGREDIENT STATEMENT - An ingredient statement is required on the front panel and must contain the name and percentage by weight of each active ingredient and the total percentage by weight of all inert ingredients. The preferred location is immediately below the product name. The ingredient statement must run parallel with, and be clearly distinguished from, other text on the panel. It must not be placed in the body of other text. See Appendix V-1. [40 CFR 162.10(g)]

Item 6A. POUNDS PER GALLON STATEMENT - For liquid agricultural formulations, the pounds per gallon of active ingredient must be indicated on the label.

Item 7. FRONT LABEL PRECAUTIONARY STATEMENTS - All labels are required to have precautionary statements grouped together on the front panel, preferably within a block outline. The table below shows the minimum type size requirements on various size labels, as set forth in the Regulations.

<u>Size of Label on Front Panel in Square Inches</u>	<u>Signal Word as Re- quired Minimum Type Size All Capitals</u>	<u>"Keep Out of Reach of Children" as Required</u>
5 and under	6 point	6 point
above 5 to 10	10 point	6 point
above 10 to 15	12 point	8 point
above 15 to 30	14 point	10 point
over 30	18 point	12 point

Item 7A. CHILD HAZARD WARNING STATEMENT - All labels are required to have the statement "Keep Out of Reach of Children" located on the front panel above the signal word except where contact with children during distribution or use is unlikely. See Appendix V-1. [40 CFR §162.10(h)(1)(ii)]

Item 7B. SIGNAL WORD - The signal word (Caution, Warning, or Danger) is required on the front panel immediately below the child hazard warning statement. See Appendix V-1. [40 CFR §162.10 (h)(1)(i)]

Item 7C. SKULL & CROSSBONES AND WORD "POISON" - On products assigned a toxicity Category I on the basis of oral, inhalation, or dermal toxicity, the word "Poison" shall appear on the label in red on a background of distinctly contrasting color and the skull and crossbones shall appear in immediate proximity to the word poison. See Appendix V-1. [40 CFR §162.10(h)(1)(i)]

Item 7D. STATEMENT OF PRACTICAL TREATMENT - A statement of practical treatment (first aid or other) shall appear on the label of pesticide products in toxicity Categories I, II, and III. See Appendix V-1. [40 CFR §162.10(h)(1)(iii)]

Item 7E. REFERRAL STATEMENT - The statement "See Side (or Back) Panel for Additional Precautionary Statements" is required on the front panel for all products, unless all required precautionary statements appear on the front panel. See Appendix V-1. [40 CFR §162.10(h)(1)(iii)]

Item 8. SIDE/BACK PANEL PRECAUTIONARY LABELING - The precautionary statements as listed below must appear together on the label under the heading "PRECAUTIONARY STATEMENTS." The preferred location is at the top of the side or back panel preceding the directions for use, and it is preferred that these statements be surrounded by a block outline. Each of the three hazard warning statements must be headed by the appropriate hazard title. See Appendix V-1. [40 CFR §162.10 (h)(2)]

Item 8A. HAZARD TO HUMANS AND DOMESTIC ANIMALS - Where a hazard exists to humans or domestic animals, precautionary statements are required indicating the particular hazard, the route(s) of exposure and the precautions taken to avoid accident, injury or damage. See Appendix V-1. [40 CFR §162.10 (h)(2)(i)]

Item 8B. ENVIRONMENTAL HAZARD - Where a hazard exists to non-target organisms excluding humans and domestic animals, precautionary statements are required stating the nature of the hazard and the appropriate precautions to avoid potential accident, injury, or damage. See Appendix V-1. [40 CFR §162.10(h)(2)(ii)]

Item 8C. PHYSICAL OR CHEMICAL HAZARD

1. Flammability statement. Precautionary statements relating to flammability of a product are required to appear on the label if it meets the criteria in Appendix V-3. The requirement is based on the results of the flashpoint determinations and flame extension tests required to be submitted for all products. These statements are to be located in the side/back panel precautionary statements section, preceded by the heading "Physical/Chemical Hazards." Note that no signal word is used in conjunction with the flammability statements.
2. Criteria for declaration of non-flammability. The following criteria will be used to determine if a product is non-flammable:
 - a. A "non-flammable gas" is a gas (or mixture of gases) that will not ignite when a lighted match is placed against the open cylinder valve.
 - b. A "non-flammable liquid" is one having a flashpoint greater than 350°F (177°C) as determined by the method specified in 40 CFR §163.61-8(c)(13)(ii) of Subpart D.
 - c. A "non-flammable aerosol" is one which meets the following criteria:
 - i. The flame extension is zero inches, using the method specified in 40 CFR §163.61-8(c)(13)(ii);
 - ii. There is no flash back; and
 - iii. The flashpoint of the non-volatile liquid component is greater than 350°F (177°C), determined by the method specified in 40 CFR §163.61-8(c)(13)(i).

3. Declaration of non-flammability. Products which meet the criteria for non-flammability specified above may bear the notation "non-flammable" or "nonflammable (gas, liquid, etc.)" on the label.

It may appear as a substatement to the ingredients statement, or on a back or side panel, but shall not be highlighted or emphasized (as with an inordinately large type size) in any way that may detract from precaution.

4. Other physical/chemical hazard statements. When chemistry data submitted in accordance with 40 CFR §163.61-10(c) demonstrate hazards of a physical or chemical nature other than flammability, appropriate statements of hazard will be prescribed. Such statements may address hazards of explosivity, oxidizing or reducing capability, or mixing with other substances to produce toxic fumes.

Item 9. MISUSE STATEMENT - The following statement is required on your label: "It is a violation of Federal law to use this product in a manner inconsistent with its labeling." See Appendix V-1. [40 CFR §162.10(1)(2)(ii)]

Item 10A. STORAGE AND DISPOSAL BLOCK - All labels are required to bear storage and disposal statements. These statements are developed for specific containers, sizes, and chemical content. Make certain that the statement you use pertains specifically to your product. These instructions must be grouped and appear under the heading "Storage and Disposal" in the directions for use. This heading must be set in the same type sizes as required for the child hazard warning. Refer to Appendix V-5 for the latest specific storage and disposal product label statements.

Item 10B. DIRECTIONS FOR USE - Directions for use must be stated in terms which can be easily read and understood by the average person likely to use or to supervise the use of the pesticide. When followed, directions must be adequate to protect the public from fraud and from personal injury and to prevent unreasonable adverse effects on the environment. See Appendix V-1. [40 CFR §162.10]

B. Collateral Information

Bulletins, leaflets, circulars, brochures, data sheets, flyers, and other graphic printed matter which is referred to on the label or which is to accompany the product are termed collateral labeling. Such labeling may not bear claims or representations that differ in substance from those accepted in connection with registration of the product. It should be made part of the response to this notice and submitted for review.

VI. INSTRUCTIONS FOR SUBMISSION

All applications prepared in response to this Notice should be addressed as follows:

Mr. William H. Miller
Product Manager 16
Registration Division (TS-767)
Office of Pesticide Programs
Environmental Protection Agency
Washington, D.C. 20460
Phone No. (703) 557-2600

- A. For each manufacturing-use product for which continued registration is desired:
1. Within 90 days from receipt of this document, you must submit the "FIFRA Section 3(c)(2)(B) Summary Sheet". Refer to Appendix III-2 with appropriate attachments.
 2. Within 6 months from receipt of this document registrants must submit:
 - a. Confidential Statement of Formula, EPA Form 8570-4.
 - b. Product Specific Data Report (Appendix IV-1).
 - c. Two copies of any required product-specific data.
 3. Within the time set forth in Table A, all generic data must be submitted by the affected registrant(s).
- Note: If for any reason any required test is delayed or aborted so that meeting the agreed submission time will be delayed, notify the Product Manager listed above.
- B. For each affected product for which continued registration is desired, within 90 days from receipt of this document submit the "FIFRA Section 3(c)(2)(B) Summary Sheet" (EPA Form 8580-1, Appendix III-2) with appropriate attachments.
- C. You will be informed at a later date when you must submit your Application for Amended Pesticide Registration (EPA Form 8570-1) and the revised labeling set forth in this guidance package.

Guide to Use of This Bibliography

1. **CONTENT OF BIBLIOGRAPHY.** This bibliography contains citations of all studies considered relevant by EPA in arriving at the positions and conclusions stated elsewhere in the Standard. Primary sources for studies in this bibliography have been the body of data submitted to EPA and its predecessor agencies in support of past regulatory decisions. Selections from other sources including the published literature, in those instances where they have been considered, will be included.
2. **UNITS OF ENTRY.** The unit of entry in this bibliography is called a "study." In the case of published materials, this corresponds closely to an article. In the case of unpublished materials submitted to the Agency, the Agency has sought to identify documents at a level parallel to the published article from within the typically larger volumes in which they were submitted. The resulting "studies" generally have a distinct title (or at least a single subject), can stand alone for purposes of review, and can be described with a conventional bibliographic citation. The Agency has attempted also to unite basic documents and commentaries upon them, treating them as a single study.
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- b. Document Date. When the date appears as four digits with no question marks, the Agency took it directly from the document. When a four-digit date is followed by a question mark, the bibliographer deduced the date from evidence in the document. When the date appears as (19??), the Agency was unable to determine or estimate the date of the document.
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 - (1) Submission Date. The date of the earliest known submission appears immediately following the word "received."
 - (2) Administrative Number. The next element, immediately following the word "under," is the registration number, experimental use permit number, petition number, or other administrative number associated with the earliest known submission.
 - (3) Submitter. The third element is the submitter, following the phrase "submitted by." When authorship is defaulted to the submitter, this element is omitted.
 - (4) Volume Identification (Accession Numbers). The final element in the trailing parentheses identifies the EPA accession number of the volume in which the original submission of the study appears. The six-digit accession number follows the symbol "CDL," standing for "Company Data Library." This accession number is in turn followed by an alphabetic suffix which shows the relative position of the study within the volume. For example, within accession number 123456, the first study would be 123456-A; the second, 123456-B; the 26th, 123456-Z; and the 27th, 123456-AA.

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FIFRA SECTION 3(C)(2)(B) SUMMARY SHEET

EPA REGISTRATION NO.

PRODUCT NAME

APPLICANT'S NAME

DATE GUIDANCE DOCUMENT ISSUED

With respect to the requirement to submit "generic" data imposed by the FIFRA section 3(C)(2)(B) notice contained in the referenced Guidance Document, I am responding in the following manner:

- ☐ 1. I will submit data in a timely manner to satisfy the following requirements. If the test procedures I will use deviate from (or are not specified in) the Registration Guidelines or the Protocols contained in the Reports of Expert Groups to the Chemicals Group, OECD Chemicals Testing Programme, I enclose the protocols that I will use:

- ☐ 2. I have entered into an agreement with one or more other registrants under FIFRA section 3(C)(2)(B)(ii) to satisfy the following data requirements. The tests, and any required protocols, will be submitted to EPA by:

NAME OF OTHER REGISTRANT

- ☐ 3. I enclose a completed "Certification of Attempt to Enter Into an Agreement with Other Registrants for Development of Data" with respect to the following data requirements:

- ☐ 4. I request that you amend my registration by deleting the following uses (this option is not available to applicants for new products):

- ☐ 5. I request voluntary cancellation of the registration of this product. (This option is not available to applicants for new products.)

REGISTRANT'S AUTHORIZED REPRESENTATIVE

SIGNATURE

DATE

**CERTIFICATION OF ATTEMPT TO ENTER
INTO AN AGREEMENT WITH OTHER REGISTRANTS
FOR DEVELOPMENT OF DATA**

(To qualify, certify ALL four items)

1. I am duly authorized to represent the following firm(s) who are subject to the requirements of a Notice under FIFRA Section 3(c)(2)(B) contained in a Guidance Document to submit data concerning the active ingredient:

GUIDANCE DOCUMENT DATE

ACTIVE INGREDIENT

NAME OF FIRM

EPA COMPANY NUMBER

(This firm or group of firms is referred to below as "my firm".)

2. My firm is willing to develop and submit the data as required by that Notice, if necessary. However, my firm would prefer to enter into an agreement with one or more other registrants to develop jointly, or to share in the cost of developing, the following required items or data:

3. My firm has offered in writing to enter into such an agreement. Copies of the offers are attached. That offer was irrevocable and included an offer to be bound by an arbitration decision under FIFRA Section 3(c)(2)(B)(iii) if final agreement on all terms could not be reached otherwise. This offer was made to the following firm(s) on the following date(s):

NAME OF FIRM

DATE OF OFFER

However, none of those firm(s) accepted my offer.

4. My firm requests that EPA not suspend the registration(s) of my firm's product(s), if any of the firms named in paragraph (3) above have agreed to submit the data listed in paragraph (2) above in accordance with the Notice. I understand EPA will promptly inform me whether my firm must submit data to avoid suspension of its registration(s) under FIFRA Section 3(c)(2)(B). (This statement does not apply to applicants for new products.) I give EPA permission to disclose this statement upon request.

TYPED NAME

SIGNATURE

DATE

Appendix IV-1

PRODUCT SPECIFIC DATA REPORT

EPA Registration No. _____ Guidance Document for _____

Date _____

Registration Guideline No.	Name of Test	Test not required for my product listed above (check below)	I am complying with data requirements by Submitting Data (At- tached)	(For EPA Use Only) Accession Numbers Assigned
\$158.20 PRODUCT CHEMISTRY				
61-1	Identity of ingredients			
61-2	Statement of composition			
61-3	Discussion of formation of ingredients			
62-1	Preliminary analysis			
62-2	Certification of limits			
62-3	Analytical methods for enforcement limits			
63-2	Color			
63-3	Physical state			
63-4	Odor			
63-5	Melting point			
63-6	Boiling point			
63-7	Density, bulk- density, or specific gravity			
63-8	Solubility			
63-9	Vapor pressure			
63-10	Dissociation constant			

PRODUCT SPECIFIC DATA REPORT

EPA Registration No. _____ Guidance Document for _____

Date _____

Registration Guideline No.	Name of Test	Test not required for my product listed above (check below)	I am complying with data requirements by		(For EPA Use Only) Accession Numbers Assigned
			Submit- ting Data (At- tached)	Citing MRID#	
63-12	pH				
63-13	Stability				
63-14	Oxidizing/reducing reaction				
63-15	Flammability				
63-16	Explosibility				
63-17	Storage stability				
63-18	Viscosity				
63-19	Miscibility				
63-20	Corrosion characteristics				
63-21	Dielectric break- down voltage				
\$158.135 TOXICOLOGY					
81-1	Acute oral LD-50, rat				
81-2	Acute dermal LD-50				
81-3	Acute inhalation, LC-50 rat				
81-4	Primary eye irritation, rabbit				
81-5	Primary dermal irritation				
81-6	Dermal sensitiza- tion				

LABELING REQUIREMENTS OF THE FIFRA, AS AMENDED (REFER TO THE SAMPLE LABELS FOLLOWING)

ITEM	LABEL ELEMENT	APPLICABILITY OF REQUIREMENT	PLACEMENT ON LABEL		COMMENTS
			REQUIRED	PREFERRED	
1	Product name	All products	Front panel	Center front panel	
2	Company name and address	All products	None	Bottom front panel or end of label text	If registrant is not the producer, must be qualified by "Packed for . . .," "Distributed by . . .," etc.
3	Net contents	All products	None	Bottom front panel or end of label text	May be in metric units in addition to U.S. units
4	EPA Est. No.	All products	None	Front panel	Must be in similar type size and run parallel to other type.
5	EPA Reg. No.	All products	None	Front panel, immediately before or following Reg. No.	May appear on the container instead of the label.
6A	Ingredients statement	All products	Front panel	Immediately following product name	Text must run parallel with other text on the panel.
6B	Pounds/gallon statement	Liquid products where dosage given as lbs. ai/unit area	Front panel	Directly below the main ingredients statement	
7	Front panel precautionary statements	All products	Front panel		All front panel precautionary statements must be grouped together, preferably blocked.
7A	Keep Out of Reach of Children (Child hazard warning)	All products	Front panel	Above signal word	Note type size requirements.
7B	Signal word	All products	Front panel	Immediately below child hazard warning	Note type size requirements.

APPENDIX V-2 (continued)

ITEM	LABEL ELEMENT	APPLICABILITY OF REQUIREMENT	PLACEMENT ON LABEL		COMMENTS
			REQUIRED	PREFERRED	
7C	Skull & crossbones and word POISON (in red)	All products which are Category I based on oral, dermal, or inhalation toxicity	Front panel	Both in close proximity to signal word	
7D	Statement of practical treatment	All products in Categories I, II, and III	Category I: Front panel unless referral statement is used. Others: Grouped with side panel precautionary statements.	Front panel for all.	
7E	Referral statement	All products where precautionary labeling appears on other than front panel.	Front panel		
8	Side/back panel precautionary statements	All products	None	Top or side of back panel preceding directions for use	Must be grouped under the headings in 8A, 8B, and 8C; preferably blocked.
8A	Hazards to humans and domestic animals	All products in Categories I, II, and III	None	Same as above	Must be preceded by appropriate signal word.
8B	Environmental hazards	All products	None	Same as above	Environmental hazards include bee caution where applicable.

APPENDIX V-2 (continued)

ITEM	LABEL ELEMENT	APPLICABILITY OF REQUIREMENT	PLACEMENT ON LABEL		COMMENTS
			REQUIRED	PREFERRED	
8C	Physical or chemical hazards	All pressurized products, others with flash points under 150°F	None	Same as above	
9A	Restricted block	All restricted products	Top center of front panel	Preferably blocked	Includes a statement of the terms of restriction. The words "RESTRICTED USE PESTICIDE" must be same type size as signal word.
9C	Misuse statement.	All products	Immediately following statement of classification or ahead of directions for use		
10A	Re-entry statement	All cholinesterase inhibitors	In the directions for use	Immediately after misuse statement	
10C	Storage and disposal block	All products	In the directions for use	Immediately before specific directions for use or at the end of directions for use	Must be set apart and clearly distinguishable from other directions for use.
10D U.S.	Directions for use	All products	None	None	May be in metric as well as U.S. units

PHYSICAL-CHEMICAL HAZARDS

<u>Criteria</u>	<u>Required Label Statement</u>
I. Pressurized Containers	
A. Flashpoint at or below 20°F; or if there is a flashback at any valve opening.	Extremely flammable. Contents under pressure. Keep away from fire, sparks, and heated surfaces. Do not puncture or incinerate container. Exposure to temperatures above 130°F may cause bursting.
B. Flashpoint above 20°F and not over 80°F; or if the flame extension is more than 18 inches long at a distance of 6 inches from the valve opening.	Flammable. Contents under pressure. Keep away from heat, sparks, and flame. Do not puncture or incinerate container. Exposure to temperatures above 130°F may cause bursting.
C. <u>ALL OTHER PRESSURIZED CONTAINERS</u>	Contents under pressure. Do not use or store near heat or open flame. Do not puncture or incinerate container. Exposure to temperatures above 130°F may cause bursting.
II. Non-Pressurized Containers	
A. Flashpoint at or below 20°F.	Extremely flammable. Keep away from fire, sparks, and heated surfaces.
B. Flashpoint above 20°F and over 80°F.	Flammable. Keep away from heat and open flame.
C. Flashpoint over 80°F and not over 150°F.	Do not use or store near heat and open flame.
D. Flashpoint above 150°F.	None required.

STORAGE AND DISPOSAL INSTRUCTIONS FOR PESTICIDES

All products are required to bear specific label instructions about storage and disposal. Storage and disposal instructions must be grouped together in the directions for use portion of the label under the heading STORAGE AND DISPOSAL. Products intended solely for domestic use need not include the heading "STORAGE AND DISPOSAL." The STORAGE AND DISPOSAL heading must appear in the minimum type size listed below:

Size of label front panel in square inches	Required type size for the heading STORAGE AND DISPOSAL (all capitals)
10 and under	.6 point
Above 10 to 15	.8 point
Above 15 to 30	10 point
Over 30.	12 point

Storage and disposal instructions must be set apart and clearly distinguishable from other directions for use. Blocking storage and disposal statements with a solid line is suggested as a means of increasing their prominence.

A. Storage Instructions:

All product labels are required to have appropriate storage instructions. Specific storage instructions are not prescribed. Each registrant must develop his own storage instructions, considering, when applicable, the following factors:

1. Conditions of storage that might alter the composition or usefulness of the pesticide. Examples could be temperature extremes, excessive moisture or humidity, heat, sunlight, friction, or contaminating substances or media.
2. Physical requirements of storage which might adversely affect the container of the product and its ability to continue to function properly. Requirements might include positioning of the container in storage, storage or damage due to stacking, penetration of moisture, and ability to withstand shock or friction.
3. Specifications for handling the pesticide container, including movement of container within the storage area, proper opening and closing procedures (particularly for opened containers), and measures to minimize exposure while opening or closing container.

Appendix V-5
(continued)

4. Instructions on what to do if the container is damaged in any way, or if the pesticide is leaking or has been spilled, and precautions to minimize exposure if damage occurs.
5. General precautions concerning locked storage, storage in original container only, and separation of pesticides during storage to prevent cross-contamination of other pesticides, fertilizer, food, and feed.
6. General storage instructions for household products should emphasize storage in original container and placement in locked storage areas.

B. Pesticide Disposal Instructions:

The label of all products, except those intended solely for domestic use, must bear explicit instructions about pesticide disposal. The statements listed below contain the exact wording that must appear on the label of these products:

1. The labels of all products, except domestic use, must contain the statement, "Do not contaminate water, food, or feed by storage or disposal."
2. Except those products intended solely for domestic use, the labels of all products that contain active ingredients appearing on the "Acutely Hazardous" Commercial Pesticide Products List (RCRA "E" List) at the end of this appendix or are assigned to Toxicity Category I on the basis of oral or dermal toxicity, skin or eye irritation potential, or Toxicity Category I or II on the basis of acute inhalation toxicity must bear the following pesticide disposal statement:

"Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance."

The labels of all products, except those intended for domestic use, containing active or inert ingredients that appear on the "Toxic" Commercial Pesticide Products' List (RCRA "F" List) at the end of this appendix or presently meet any of the criteria in Subpart C, 40 CFR 261 for a hazardous waste must bear the following pesticide disposal statement:

"Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance."

Labels for all other products, except those intended for domestic use, must bear the following pesticide disposal statement:

"Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility."

3. Products intended for domestic use only must bear the following disposal statement: "Securely wrap original container in several layers of newspaper and discard in trash."

C. Container Disposal Instructions

The label of each product must bear container disposal instructions appropriate to the type of container.

1. All products intended for domestic use must bear one of the following container disposal statements:

Container Type	Statement
Non-aerosol products (bottles, cans, jars)	Do not reuse container (bottle, can, jar). Rinse thoroughly before discarding in trash.
Non-aerosol products (bags)	Do not reuse bag. Discard bag in trash.
Aerosol products	Replace cap and discard containers in trash. Do not incinerate or puncture.

2. The labels for all other products must bear container disposal instructions, based on container type, listed below:

Container Type	Statement
Metal containers (non-aerosol)	Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.
Plastic containers	Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.
Glass containers	Triple rinse (or equivalent). Then dispose of in a sanitary landfill or by other approved state and local procedures.

Appendix V-5
(continued)

Container Type	Statement
Fiber drums with liners	Completely empty liner by shaking and tapping sides and bottom to loosen clinging particles. Empty residue into application equipment. Then dispose of liner in a sanitary landfill or by incineration if allowed by state and local authorities. If drum is contaminated and cannot be reused ¹ , dispose of in the same manner.
Paper and plastic bags	Completely empty bag into application equipment. Then dispose of empty bag in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.
Compressed gas cylinders	Return empty cylinder for reuse (or similar wording).

¹Manufacturer may replace this phrase with one indicating whether and how fiber drum may be reused.

- The labels for all other products must bear container disposal instructions, based on container type, listed on the first page of this Appendix.

Pesticides that are hazardous wastes under 40 CFR 261.33(e) and (f) when discarded.

"Acutely Hazardous" Commercial Pesticides (RCRA "E" List)
Active Ingredients, (no inerts):

Acrolein
Aldicarb
Aldrin
Allyl alcohol
Aluminum phosphide
4-Aminopyridine
Arsenic acid
Arsenic pentoxide
Arsenic trioxide
Calcium cyanide
Carbon disulfide
p-Chloroaniline
Cyanides (soluble cyanide salts, not specified elsewhere)
Cyanogen chloride
2-Cyclohexyl-4,6-dinitrophenol
Dieldrin
0,0-Diethyl S-[2-ethylthio)ethyl] phosphorodithioate
(disulfoton, Di-Syston)
0,0-Diethyl 0-pyrazinyl phosphorothioate (Zinophos)
Dimethoate
0,0-Dimethyl 0-p-nitrophenyl phosphorothioate (methyl parathion)
4,6-Dinitro-o-cresol and salts
4,6-Dinitro-o-cyclohexylphenol
2,4 Dinitrophenol
Dinoseb
Endosulfan
Endothall
Endrin
Famphur
Fluoroacetamide
Heptachlor
Hexanethyl tetraphosphate
Hydrocyanic acid
Hydrogen cyanide
Methomyl
alpha-Naphthylthiourea (ANTU)
Nicotine and salts
Octamethylpyrophosphoramidate (OMPA, schradan)
Parathion

"Acutely Hazardous" Commercial Pesticides (RCRA "E" List)
Active Ingredients continued:

Phenylmercuric acetate (PMA)
Phorate
Potassium cyanide
Propargyl alcohol
Sodium azide
Sodium cyanide
Sodium fluoroacetate
Strychnine and salts
0,0,0,0-Tetraethyl dithiopyrophosphate (sulfotepp)
Tetraethyl pyrophosphate
Thallium sulfate
Thiofanox
Toxaphene
Warfarin
Zinc phosphide

There are currently no inert ingredients for commercial pesticides on the "Acutely Hazardous" List (RCRA "E" List).

"Toxic" Commercial Pesticide Products (RCRA "F" List)
Active Ingredients:

Acetone
Acrylonitrile
Amitrole
Benzene
Bis(2-ethylhexyl)phthalate
Cacodylic acid
Carbon tetrachloride
Chloral (hydrate)
Chlordane (technical)
Chlorobenzene
4-Chloro-m-cresol
Chloroform
o-Chlorophenol
4-Chloro-o-toluidine hydrochloride
Creosote
Cresylic acid
Cyclohexane
Decachlorooctahydro-1,3,4-metheno-2H-cyclobuta[c,d]-pentalen-2-one
(kepone, chlordecone)
1,2-Dibromo-3-chloropropane (DBCP)
Dibutyl phthalate
S-3,3-(Dichloroallyl diisopropylthiocarbamate (diallate, Avadex)
o-Dichlorobenzene
p-Dichlorobenzene
Dichlorodifluoromethane (Freon 12®)
3,5-Dichloro-N-(1,1-dimethyl-2-propynyl) benzamide (pronamide, Kerb)
Dichloro diphenyl dichloroethane (DDD)
Dichloro diphenyl trichloroethane (DDT)
Dichlorethyl ether
2,4-Dichlorophenoxyacetic, esters and salts (2,4-D)
1,2-Dichloropropane
1,3-Dichloropropane (Telone)
Dimethyl phthalate
Ethyl acetate
Ethyl 4,4'-dichlorobenzilate (chlorobenzilate)
Ethylene dibromide (EDB)
Ethylene dichloride
Ethylene oxide
Formaldehyde
Furfural
Hexachlorobenzene
Hexachlorocyclopentadiene
Hexachloroethane
Hydrofluoric acid

Appendix V-5
(continued)

"Toxic" Commercial Pesticide Products (RCRA "F" List)
Inert Ingredients:

Acetone	Formaldehyde
Acetonitrile	Formic acid
Acetophenone	Isobutyl alcohol
Acrylic acid	Meleic anhydride
Aniline	Methyl alcohol (methanol)
Benzene	Methyl ethyl ketone
Chlorobenzene	Methyl methacrylate
Chloroform	Naphthalene
Cyclohexane	Saccharin and salts
Cyclohexanone	Thiourea
Dichlorodifluoromethane (Freon 12®)	Toluene
Diethyl phthalate	1,1,1-Trichloroethane
Dimethylamine	1,1,2-Trichloroethane
Dimethyl phthalate	Trichlorofluoromethane (Freon 11®)
1,4-Dioxane	Vinyl chloride
Ethylene oxide	Xylene